

41CrAlMo7-10 (1.8509)

Material Designation

1.8509 DIN

Standards

DIN EN 10085
DIN EN ISO 683-5

Chemical Composition Mass-%

	C	Si	Mn	P	S	Cr	Mo	Al
min.	0,38	-	0,40	-	-	1,50	0,20	0,80
max.	0,45	0,40	0,70	0,025	0,025	1,80	0,35	1,20

Properties

41CrAlMo7-10 is a Cr-Al-Mo nitriding steel with high strength and toughness in the core. After nitriding, it achieves very high surface hardness and offers excellent wear resistance, high fatigue strength, and good dimensional stability. Difficult to weld.

Delivery Condition

- ✘ quenched and tempered (+QT)
- ✘ quench., tempered, stress relieved (+QT +SR)
- ✘ annealed (+A), max. 248 HBW

Application Area

Highly loaded parts requiring a hard surface and tough core, such as pistons, cylinders or pinion shafts. Nitriding of the surface is carried out after machining.

Typical Applications

- ✘ Heavy-duty engine manufacturing
- ✘ Automotive industry
- ✘ General mechanical engineering

Mechanical Properties quenched and tempered (+QT) acc. DIN EN 10085, at room temperature

Diameter d [mm]	0,2% Yield strength [N/mm ²]	Tensile strength [N/mm ²]	Elongation [%]	Impact toughness [J] Charpy-V
16 ≤ d ≤ 40	≥ 750	950 - 1150	≥ 11	≥ 25
40 < d ≤ 100	≥ 720	900 - 1100	≥ 13	≥ 25
100 < d ≤ 160	≥ 670	850 - 1050	≥ 14	≥ 30
160 < d ≤ 250	≥ 625	800 - 1000	≥ 15	≥ 30

Heat Treatment guideline values

	Temperature [°C]	Cooling medium
Annealing (+A)	650 - 750	
Quenching and tempering (+QT)	870 - 930 (Hardening) 580 - 700 (Tempering) ¹	Oil, water
Nitriding	480 - 570	

¹Minimum 50 °C above nitriding temperature.

Quality

- ISO 9001
- ISO 14001
- ISO 50001
- Approvals acc. to standards like ABS, BV, DNV ...
- Customer specific approval certificates

Innovation

- Fully automated ultrasonic testing up to dia. 1000 mm
- CO₂-reduction by innovative heat treatment solutions

Flexibility

- Product range from fine wire to forging
- Directly from stock close at hand

Individuality

- Dimensions
- Tolerances
- Surface qualities
- Delivery conditions

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